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FISHERIES BULLETIN

Volume III Number 5
September-October 1950

) AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
ington, D.C., U.S.A.

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Economic Notes

WESTERN GERMANY: LANDINGS AND TRADE

Reconstruction of the fishing fleet

The Western German fishing fleet has decreased by 70 percent in number and 75 percent in tonnage since 1939, largely due to losses during World War II. A recent survey shows the following wartime losses and postwar reconstruction work for the three principal Western German ports (Bremerhaven, Cuxhaven, and Hamburg):

	Number of craft 1 Sept. 1939	Additions	Withdrawals and losses	Number of craft 31 Dec. 1949
Number of craft	388	74	323	139
Tonnage	130,733	35,859	124,008	42,584

Landings

Table 10 represents the landings in Western Germany for 1947, 1948, and 1949, as compared with the 1938 landings for all of Germany. Anyone comparing Western German landings with prewar figures should bear in mind that some 50,000 tons were landed annually along the prewar German Baltic shore. It appears that the 1949 landings, which show an increase during the postwar period, are still about one-third less than the peak prewar production of 1938. The data in Table 10 indicate that the decline is principally caused by smaller landings of cod, hake, and allied species, which were over 400,000 tons in 1938 but less than 225,000 tons in 1949. Except for some 10,000 tons of herring landed from the Baltic, most of the quantities of herring and allied species landed in Germany come from the North Sea. Although the 1949 landings for these species exceed the 1938 level, they are still less than the production of herring and allied species in the German peak year of 1937, when landings exceeded 260,000 metric tons.

Imports

The imports of principal fishery products from country of origin into Western Germany in 1947 and 1949 are compared with imports into all of Germany in 1938 (Table 11). The task of obtaining comparability of postwar data with prewar figures is much more difficult in the case of trade than of landings. Fresh fish imports into Western Germany in 1947 and 1949 were about triple the amount imported by the whole of Germany in 1938.

Table 10. - Western Germany: Landings of Fish, 1938 and 1947-49

Species group	1938 a/	1947	1948	1949
	Round fresh weight basis			
	(Metric tons)			
Teleostean fresh-water species	25 954	85	2 160	1 163
Salmon and allied species	79	ø	12	75
Teleostean flatfishes	13 022	440	6 572	9 875
Cod, hake, and allied species	411 783	133 517	194 043	223 916
Herring and allied species	226 521	150 307	172 965	234 982
Tunas, true mackerels, and allied species	5 508	1 324	6 587	6 103
Other teleostean marine species	5 110	2 854	567	244
Elasmobranchs	2 064	1 214	2 029	2 462
Crustaceans	34 352	11 231	14 200	19 222
Mollusks	3 651	560	12 113	1 403
Miscellaneous b/	59 242	579	2 202	14 204
TOTAL	787 286	302 111	413 450	513 649

Source: Official communication.

a/ Data are for all of prewar Germany.
b/ Includes unsold and confiscated fish used for conversion into meal; roe, liver, milt, and residues from liver-oil extraction; incidental catches; and fish used for feedstuff.

Table 11. - Western Germany: Imports of Principal Fisheries Products by Countries of Origin, 1938 and 1947-49 a/

Commodity and country of origin	1938 b/	1947	1948	1949
	(Metric tons)			
Fresh fish				
United Kingdom	256	-	-	-
Norway	4 866	-	5 380	8 603
Iceland	5 321	-	63 260	59 678
Sweden	976	-	-	-
Denmark	8 869	665	595	6 270
Netherlands	508	-	-	-
Belgium	171	-	-	1 269
France	72	-	-	-
Newfoundland	-	-	-	-
Other countries	976	-	-	-
Total c/	22 015	665	69 235	75 820
Frozen fish and fillets				
United Kingdom	4	-	-	-
Norway	31	422	2 094	1 165
Iceland	6	-	-	6 812
Sweden	57	-	-	-
Denmark	572	-	-	-
Netherlands	22	-	-	-
Belgium	-	-	-	-
France	2	-	-	-
Newfoundland	-	-	-	-
Other countries	938	-	-	-
Total c/	1 632	422	2 094	7 977
Fresh herring				
United Kingdom	32 640	14 009	26 472	11 465
Norway	61 611	43 514	63 288	64 992
Iceland	-	362	2 605	-
Sweden	12 485	-	595	5 942
Denmark	10 853	1 605	1 281	21 646
Netherlands	6 894	-	3 221	6 723
Belgium	1 505	4 228	860	4 660
France	1 358	-	-	855
Newfoundland	-	-	-	-
Other countries	185	-	-	-
Total	127 531	63 718	98 322	116 283

See notes at end of table.

Table 11. - Western Germany: Imports of Principal Fisheries Products by Countries of Origin, 1938 and 1947-49 a/ (concluded)

Commodity and country of origin	1938 a/	1947	1948	1949
	(Metric tons)			
Frozen herring				
United Kingdom	-	-	-	-
Norway	-	10 752	18 309	16 257
Iceland	-	-	-	-
Sweden	-	-	-	-
Denmark	-	-	-	100
Netherlands	-	-	-	-
Belgium	-	-	-	-
France	-	-	-	-
Newfoundland	-	-	-	-
Other countries	-	-	-	-
Total	-	10 752	18 309	16 357
Salted herring				
United Kingdom	36 557	19 333	32 038	21 002
Norway	3 405	18 329	43 190	35 315
Iceland	2 904	-	-	-
Sweden	251	-	7 285	-
Denmark	36	-	-	56
Netherlands	7 032	-	4 503	9 048
Belgium	4	-	-	292
France	-	-	-	-
Newfoundland	-	-	11 060	-
Other countries	27	-	-	-
Total	50 216	37 662	98 076	65 713
Other salted fish				
United Kingdom	14	-	-	-
Norway	1 524	-	747	80
Iceland	329	-	-	-
Sweden	176	-	-	-
Denmark	12	-	-	-
Netherlands	1 202	-	-	-
Belgium	-	-	-	-
France	-	-	-	-
Newfoundland	-	-	-	-
Other countries	1 341	-	-	-
Total	4 598	-	747	80
Canned fish				
United Kingdom	1	-	-	-
Norway	404	-	-	236
Iceland	-	-	-	-
Sweden	66	-	-	189
Denmark	4	-	-	3
Netherlands	-	-	-	-
Belgium	318	-	-	90
France	81	-	-	3
Newfoundland	-	-	-	-
Other countries	13 953	-	-	426
Total	14 827	-	-	947
GRAND TOTAL	220 819	113 219	286 783	283 177

SOURCES: 1938: Monatliche Nachweise über den auswärtigen Handel Deutschland, December 1938.
1947: German Fisheries, Weekly report issued by Fisheries Bipartite Control Group, Food and Agriculture Division, CCG, Hamburg. 31 December 1947.
1948: Die Seefischereides Vereinigten Wirtschaftgebietes im Jahre 1948. Verwaltung für Ernährung, Landwirtschaft und Forsten des Vereinigten Wirtschaftsgebietes. Frankfurt on the Main, March 1950 (Mimeographed report).
1949: Fischereiwelt, Zeitschrift für die Gesamte Seefischwirtschaft, Vol. 2, No. 3 (March 1950).

a/ Die Seefischereides Vereinigten Wirtschaftgebietes lists as total imports for 1946 of the fisheries products contained in this table 126,801 metric tons as follows: fresh fish (excluding herring), 6,554; frozen fish (excluding herring) and fillets, 6,918; fresh herring, 41,882; frozen herring, 4,040; salted herring 64,287; and canned fish, 3,120. The United Kingdom supplied 34,062 metric tons; Norway 112,683; Sweden 7,252; Denmark 18,256; and Belgium 330.
b/ Data for all of Prewar Germany.
c/ Excludes herring.

Table 12.- Exports of Certain Fisheries Products from Principal Exporting Countries, 1938, 1946-49, and Latest Available Period of 1950 Compared with Same Period in 1949

Commodity and country	Calendar year					Partial year		
	1938	1946	1947	1948	1949	Period covered	1949	1950
	(Metric tons)						(Metric tons)	
Fish, fresh or frozen								
Netherlands	20 700	6 438	12 807	13 427	20 543	Jan.-May	7 177	5 258
Denmark	51 947	85 431	80 650	79 903	103 334	Jan.-May	42 924	42 197
Iceland	17 430	96 745	87 621	151 781	156 442	Jan.-June	83 165	32 812
United Kingdom	54 664	12 114	15 583	30 929	13 366	Jan.-May	3 411	2 821
France	14 125	101	784	229	2 904	Jan.-Apr.	345	563
Belgium	5 257	1 594	17 934	6 595	10 359	Jan.-Apr.	6 679	1 799
Norway a/	120 167	80 787	136 034	182 830	181 775	Jan.-Apr.	147 795	72 301
Canada	49 871	106 630	92 218	96 380	92 599	Jan.-May	28 827	29 807
Total	334 161	389 840	443 631	562 074	581 322		320 323	187 558
Fish, salted, dried, or smoked								
Netherlands	76 741	14 869	48 816	48 937	51 652	Jan.-May	26 190	22 388
Denmark	2 490	8 828	16 168	17 080	9 682	Jan.-May	6 066	1 761
Iceland	80 248	27 842	35 287	28 549	30 548	Jan.-June	13 759	16 416
United Kingdom	162 670	35 319	40 446	55 350	54 665	Jan.-May	19 817	19 627
France	21 492	105	1 697	2 538	7 950	Jan.-Apr.	1 974	4 697
Belgium	730 b/	5 353	3 276	1 412	783	Jan.-Apr.	134	102
Norway a/	111 728	180 684	167 102	174 196	157 682	Jan.-Apr.	62 993	45 170
Canada	43 326	48 672	43 988	49 164	73 288	Jan.-May	30 436	36 649
Total	499 425	321 672	356 780	377 226	386 250		161 369	146 810
Fish, canned								
Netherlands	554	1 359	6 493	5 345	6 429	Jan.-May	2 455	2 189
Denmark	384	250	1 484	2 405	5 070	Jan.-May	2 169	3 500
Iceland	16	513	340	959	423	Jan.-June	226	303
United Kingdom c/	4 969	3 748	4 991	5 455	7 548	Jan.-May	3 881	5 137
Portugal d/	34 389	44 284	34 488	36 845	23 675	Jan.-May	5 781	6 318
France	5 187	923	2 319	2 619	2 617	Jan.-Apr.	989	839
Belgium	1 401 b/	141	460	394	768	Jan.-Apr.	309	664
Norway a/	25 419	25 902	31 406	31 616	28 050	Jan.-Apr.	10 348	14 971
Canada	27 449	67 786	69 075	39 862	28 145	Jan.-May	5 801	3 659
Total	99 768	144 906	151 056	125 500	102 725		31 959	37 580
Crustaceans and mollusks								
Netherlands	46 118	25 376	46 589	44 133	45 681	Jan.-May	13 477	12 561
Denmark	61	38	19	2 515	9 684	Jan.-May	2 941	4 409
Iceland	62	2	-	-	-	Jan.-June	-	-
France	8 872	3 273	3 362	2 392	3 969	Jan.-Apr.	1 647	1 396
Belgium	3 622	46	6	3	15	Jan.-Apr.	1	84
Norway a/	3 410	1 438	4 219	3 866	3 188	Jan.-Apr.	721	1 435
Canada	9 008	11 507	9 803	11 285	12 652	Jan.-May	5 688	5 594
Total	71 153	41 680	63 992	64 194	75 189		24 475	25 479
Fish oils								
Netherlands a/	50 466	25	7 205	5 176	3 524	Jan.-May	1 937	1 194
Denmark	871	199	392	1 155	1 256	Jan.-May	644	1 232
Iceland	27 920	24 684	25 934	36 371	12 917	Jan.-June	3 531	10 578
United Kingdom f/	11 100	4 291	4 272	6 549	6 697	Jan.-May	2 405	3 237
Portugal	-	3 255	2 132	398	1 489	Jan.-May	1 096	1 256
Norway a/	35 969	19 766	25 496	29 052	30 488	Jan.-Apr.	12 608	6 466
Canada	14 165	2 023	938	4 553	17 835	Jan.-May	3 733	7 855
Total	140 491	54 243	66 369	83 254	74 206		25 954	31 818
Fish meal and fertilizer								
Netherlands	942	125	1 262	2 412	1 255	Jan.-May	851	587
Iceland	22 294	16 364	16 622	39 617	6 950	Jan.-June	5 124	4 433
Belgium	206	-	-	-	537	Jan.-Apr.	205	190
Norway a/	81 253	10 254	8 382	14 695	11 219	Jan.-Apr.	2 858	20 736
Canada	19 518	29	-	21 737	27 524	Jan.-May	18 519	14 862
Total	124 213	26 772	26 266	78 461	47 485		27 557	40 808
Aquatic mammal oils and fats								
Denmark	959	379	277	308	301	Jan.-May	204	55
Iceland	843	3	-	773	2 499	Jan.-June	749	-
Portugal	1 989	3 363	3 805	1 603	1 187	Jan.-May	770	785
Norway a/	5 161	11 443	36 623	29 573	7 185	Jan.-Apr.	1 491	-
Total	8 952	15 188	40 705	32 257	11 172		3 214	840

SOURCE: Official publications and special reports.

a/ Includes re-exports, 1938 and 1946-48.
b/ Includes some crustaceans and mollusks.
c/ Includes canned crustaceans and mollusks.
d/ Includes small quantities of fresh or dried fish.
e/ Marine mammal oils may be included with fish oils.
f/ Includes marine mammal oils and animal oils and fats.

EXPANSION OF NORWEGIAN HERRING OIL FACTORIES

The Norwegian Government will guarantee a loan of 4.5 million kroner to Norges Sildesalgslag for expanding the facilities of existing herring oil and herring meal factories and for building new ones in western Norway. The capacity of the Egersund factory will be increased from 5,000 to 10,000 barrels a day, that of the Moltestrand factory from 5,000 to 15,000, and that of the Horsoya factory from 9,000 to 14,000. A new factory, which will handle 15,000 barrels a day, will be built at Florö.

EXPORT STATISTICS

In Table 12, exports of certain fisheries products, by commodity groups, are brought up-to-date. The principal exporting countries are listed for each commodity group, with annual statistics from 1946 to 1949, as compared with the representative prewar year, 1938. Partial year coverage, extending from January to April, May, or June, gives the latest available period for 1950 with comparisons for the same period in 1949.

1/ Source: News of Norway (Norwegian Information Service, Washington, D.C.) Vol. 7, No. 25, 24 June 1950.

Developments

CONFERENCES AND MEETINGS

International Council for the Exploration of the Sea. The International Council for the Exploration of the Sea will hold its 38th meeting in Copenhagen, Denmark, from 2 to 10 October 1950. Organized half a century ago, the Council is renowned for the research done under its auspices and for encouraging fishery research and co-ordinating efforts of research organizations working independently in the various member countries. Member nations are Belgium, Denmark, Ireland, Finland, France, Iceland, the Netherlands, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom. Besides delegates and experts representing these countries, invitations are extended to certain other countries and international organizations to send observers.

Fishery Products Conference. The Institut Colonial de Marseille, Palais de la Bourse, Marseille, France, is calling a Conference on Fishery Products. The Conference will be held from 11 to 14 October 1950 in the Palais des Congrès du Parc Amable Chanot, Marseille, France, with Professor André Mayer as Chairman. The program includes:

1. Technical section

   a. Fisheries industries in French North Africa, French West Africa, French Equatorial Africa, French Cameroons, French Togoland, Madagascar, Viet Nam, and other countries.
   b. Fishing techniques.
   c. Fish culture in tropical countries.
   d. Utilization of fish for food in the various countries; both traditional and modern methods of preservation.

2. Economic section

   a. Internal fish trade in the different territories.
   b. External trade with France and foreign countries.

3. Executive section

   Meeting of a committee to formulate recommendations.

International Congress for the Study of the Role of Fish in Nutrition. This government-sponsored Congress will take place in Paris, 26 to 28 October 1950. The main items on the program are the following:

Thursday, 26 October - Nutritive value of fish. Nutritive value of proteins and lipides. Vitamin content of fish. Fish in dietetics, including special diets for children, adults, patients, and convalescents. Intolerances and allergies.

Friday, 27 October - Economic problems. Price of fishery products compared with other animal products. Role of fishery products in the family budget and in the national food economy.

Distribution of fish. Preservation of fish with salt, in oil, or by refrigeration. Transportation and retail marketing of fish. Utilization of by-products and oils.

Saturday, 28 October - Consumer education. Questions of education and propaganda.

The President of the Congress is Professor André Mayer, Chairman of the French National FAO Committee. The address of the general secretariat of the Congress is: Congrès international d'étude sur le rôle du poisson dans l'alimentation, 11 rue Anatole de la Forge, Paris 17^{e}, France.

Gulf and Caribbean Fisheries Institute. The Gulf and Caribbean Fisheries Institute will hold its third annual session at Miami Beach, Florida, U.S.A., from 13 to 17 November 1950. The Institute is concerned with the problem of commercial fisheries in the southeastern part of North America, which includes the Gulf of Mexico and the Caribbean Sea. The annual sessions provide a forum for the exchange of information and the discussion of the fisheries in this region. Participants in past sessions have included fishermen, fish dealers, fish processors, scientists, and administrators of the Bahama Islands, Bermuda, British Guiana, Cuba, Martinique, Mexico, Netherlands West Indies, Puerto Rico, and the United States of America.

The program of the November meeting will include the presentation of papers and discussions on specific topics, covering biological and technological research, economics of the fisheries industries, gear development, exploratory fishing, and storage of fishery products. Mr. C.P. Idyll is Executive Secretary of the Institute, which has its headquarters at the University of Miami, Coral Gables, Florida, U.S.A.

International Whaling Commission. The International Whaling Commission held its second annual meeting in Oslo, Norway, from 17 to 21 July 1950. The sixteen contracting governments, each represented by one Commissioner, include Australia, Brazil, Canada, Denmark, France, Iceland, Mexico, the Netherlands, New Zealand, Norway, Panama, Sweden, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom, and the United States of America. The Commission's purpose is to assure the conservation of the world's whale resources.

During the meeting, problems of whaling regulation and research were considered. The Commissioners from New Zealand and Panama were not present at this meeting. Observers from Argentina, Chile, the International Council for the Exploration of the Sea, the Supreme Commander of Allied Powers (SCAP) in Japan, and the Association of Whaling Companies attended. FAO was represented by an observer, the Regional Fisheries Officer for Europe, Mr. M. J. Girard.

The International Bureau of Whaling Statistics reported on the results of the 1949/50 whaling season. Statistics on the Antarctic catch showed the following numbers of whales taken: 6,181 blue whales, 20,034 fin whales, 2,143 humpback whales, 1,286 sei whales, and 2,727 sperm whales. It was noted that the number of blue whales was less than that taken in previous seasons, but that the size was slightly larger than before. The size of the fin whales showed a slight decline. The provisional oil production for the 1949/50 season was given as 2,159,148 barrels, also a decrease from previous years.

On the basis of statistical data and other information, the Commission passed certain amendments to its schedule of regulations. These new regulations will come into operation in waters of the Southern Hemisphere during the 1950/51 season, providing no objections are received from any of the contracting governments prior to 1 November 1950. After reviewing at length the various biological problems which contracting governments and private institutions might be encouraged to carry out in order to increase the necessary knowledge upon which to base future regulations, the Commission made a number of recommendations designed to increase the amount of scientific research being conducted on whales.

The Commission accepted the offer of the U.K. Ministry of Agriculture and Fisheries to maintain headquarters at its offices in London for another two years. Upon the invitation of the Government of the Union of South Africa, it was decided to hold the third annual meeting in Capetown on 23 July 1951.

Inter-American Tropical Tuna Commission. The Inter-American Tropical Tuna Commission which was established in March 1950 by Costa Rica and the United States of America for the scientific investigation of the yellowfin and skipjack tuna and bait fishes in the eastern Pacific Ocean held its first meeting at Coronado, California, U.S.A., during the latter part of July. Sr. José Luis Cardona-Cooper of Costa Rica was elected Chairman of the Commission and Mr. Milton C. James of the United States was made Secretary. The Commissioners decided to establish temporary headquarters in Los Angeles, California. A general program was adopted, and arrangements were made to select a director of investigations.

FISHERIES RESEARCH VESSELS SINCE WORLD WAR II

One index of the recent growing interest manifested by maritime countries in investigating and developing their fisheries resources is the number of vessels that have been recently built for fisheries research or converted for this purpose. Most of them are equipped with the most modern devices to facilitate the study of the ocean and its life.

It is impossible to select any of the vessels as the finest or most up-to-date. They are designed for various kinds of work in various waters -- some intended for basic research, others for applied research. The newest are the Union of South Africa's 200-foot (60.96 m.) "Africana II", Norway's 170-foot (51.82 m.) "G.O. Sars," Denmark's 95-foot (29.01 m.) "Jens Vaever," Iceland's 100-foot (30.5 m.) "Maria Julia," and the United States of America's 93-foot (28.35 m.) "John N. Cobb."

The United Kingdom's 175-foot (53.34 m.) "Ernest Holt" is designed especially for Arctic research, and the Fisheries Laboratories at Lowestoft, England, have obtained the converted 138-foot (42.06 m.) trawler "Sir Lancelot." The U.K. Herring Industry Board has put two 65-foot (19.81 m.) Diesel-engined vessels in commission in order to compare the performance of differing designs of herring fishing boats.

The United States of America has the 179-foot (54.56 m.) "Albatross III," converted originally from a trawler and designed for research in the Northeast Atlantic. The Allan Hancock Foundation has a floating laboratory built in a tuna clipper hull, the "Velero IV." Furthermore, the United States has recently put into operation a

whole fleet of research vessels. The 128-foot (39.01 m.) "Hugh M. Smith" was converted from a United States Navy vessel and is intended for tuna research. In the Philippines Fishery Program, the 143-foot (43.59 m.) "Spencer F. Baird," the 90-foot (27.43 m.) "Theodore N. Gill," and the 54-foot (16.5 m.) "David Starr Jordan," all excellently equipped for various types of oceanographic research, were used. In the Pacific Oceanic Fishery Investigations, besides the "Hugh M. Smith" already mentioned, there are the 86-foot (26.21 m.) "John R. Manning" and the 128-foot (39.01 m.) "Henry O'Malley," used primarily for experimental fishing. Other vessels designed and used exclusively for exploratory and experimental fishing and gear testing are the steel vessels of approximately 100 feet (30.5 m.) called the "Oregon," the "California," and the "Alaska."

The State of California has converted an ex-navy vessel to the 114-foot (34.75 m.) research vessel "Yellowfin." Two converted ex-navy vessels, the 143-foot (43.59 m.) "Horizon" and the 80-foot (24.38 m.) "Paolina T," operated by the Scripps Institution of Oceanography of the University of California, are engaged in sardine investigations.

The U.S. Fish and Wildlife Service Laboratory at Milford, Connecticut, has obtained approval of the drawings for a new research boat, the "Charles E. Wheeler." The Chesapeake Bay Institute of Johns Hopkins University, Baltimore, Maryland, operates the 62-foot (18.9 m.) "Maury." Plans and specifications for a 60-foot (18.3 m.) research vessel for the Great Lakes have also been completed.

Besides these, numerous vessels have been added in other countries. Australia has the "H.C. Dannevig" for general oceanographic and fisheries research. Canada has built the 50-foot (15.24 m.) "Calanus" on the Atlantic Coast for research in northern waters, and the 60-foot (18.3 m.) "Investigator No. 1" on the Pacific Coast. Plans for two additional vessels for the West Coast and one for Newfoundland are under consideration. Norway has the "Uran" for trawling experiments and recently obtained the 65-foot (19.81 m.) "G.M. Dannevig" for research in Skagerak. Sweden has undertaken considerable rebuilding of its research vessels "Skagerak" and "Eystrasalt" and is considering a new vessel for technological research in Kattegat. Cuba has converted a navy tug, the "Yara," for research work. Japan has built the 225-foot (68.6 m.) "Tenyo Maru," primarily for tuna research in the western Pacific.

This is an imposing list. There are doubtless others; in addition, the numerous boats chartered or hired by various governments for short-time research and experiments have not been mentioned. It is interesting to note the number of vessels that have been named for distinguished fisheries administrators or scientists.

UNITED KINGDOM CONTINUES "DISCOVERY" INVESTIGATIONS

For a quarter of a century, the Discovery Committee, working under the United Kingdom Colonial Office, carried on scientific investigations in the waters of the Southern Ocean (southern Atlantic, Indian, and Pacific Oceans around Antarctica) and the Antarctic. Some work was also done in tropical and subtropical waters. The investigations were concerned mainly with deep-sea oceanography, but research on whales and information about fishery resources was also a part of the work. Though the program was interrupted during World War II, the Discovery Investigations are now being

continued for a period of two years by the National Institute of Oceanography of the British Admiralty, to which they were transferred in 1949. 1/

The two research vessels "William Scoresby" and "Discovery II," operated by the Discovery Committee, are engaged in the present program. The former is a ship of 324 gross tons with features of both a trawler and a whale catcher, while the latter is larger (1,036 gross tons) and specially designed as a research ship. Both vessels went on independent expeditions this year, the "William Scoresby" sailing in January and the "Discovery II" leaving in the spring.

The voyage of the "William Scoresby" is expected to last about ten months, during which time she will visit South African waters and the Indian Ocean. The ship is making a survey of the upwelling caused by the Benguela current off the coast of Southwest Africa, the study being similar to an early one conducted off the west coast of South America. Observations are also being made of the water masses and currents of the central Indian Ocean, before proceeding to the northwestern coast of Australia, where the marking of whales is being undertaken during the winter months of July and August.

Before World War II, the vessel marked several thousand whales in the Antarctic in the summer months. The present experiments are to supplement the data obtained from these earlier investigations. If time permits, the "William Scoresby" plans to carry on experimental trawling in the waters of Northwest Australia.

Main purpose of the voyage of the "Discovery II" is to complete the general oceanographic survey of the Southern Ocean which was interrupted by the war. The expedition is to be of about one and one-half years duration, the vessel working mainly in the Indian, Australian, and Pacific sectors of the Southern Ocean between subtropical waters and the fringe of the pack ice.

At designated stations, the "Discovery II" is recording the temperature, density, and chemical constituents of the water from the surface to the bottom. Plankton samples are being taken to a depth of 1,500 meters. Echo soundings are being made and deep core samples of the ocean bottom are being taken, together with measurements of ocean sediments made with seismic sounding apparatus. Data on distribution and feeding habits of whales and other marine animals are being collected. In addition, work is being conducted for the Admiralty Hydrographic Department, the Meteorological Office, and the Royal Naval Personnel Research Committee.

AUSTRALIAN WHALING PROJECT

After investigating the possibilities of establishing a whaling industry on a national basis, Australia has now embarked on such an enterprise, according to the February 1950 (Vol. 9, No. 1) issue of the Fisheries Newsletter published by the Department of Commerce and Agriculture. The project operates under the authority of the Australian Whaling Commission, which was expected to commence whaling in July 1950 from its

1/ "Voyage of the Royal Research Ship William Scoresby." Nature (London), Vol. 165, No. 4186 (21 January 1950), p. 105. "Voyage of the Royal Research Ship Discovery II." Op. cit., Vol. 165, No. 4199 (22 April 1950), p. 640.

base at Babbage Island, Carnarvon, Western Australia. During the first season, it will aim at producing approximately 4,500 tons of whale oil, 3,000 tons of meal, and 6,000 tons of whale solubles from a catch of 600 whales.

A shore station was established in preference to the operation of a factory ship, since the latter was considered uneconomical. Many sites were suggested for the shore station, Babbage Island being selected as the most suitable because of the water supply, proximity of Carnarvon and shipping facilities, available land transportation by rail and road, availability of buildings once used as a military establishment, and the fact that the locality is well situated for exploitation of the area where whales are reputed to be in great numbers.

Three catcher boats will be used to hunt and kill the whales. One of these is a new 160-foot vessel of 600 gross tons, with a speed of 15 knots; another is a 137-foot vessel of 344 gross tons, with a speed of 13 to 14 knots. The third craft had not yet been selected at the time the article referred to appeared.

The main factory building is of prefabricated steel, 220 feet by 135 feet, and will enclose a two-stage flensing deck and all processing equipment, as well as providing storage and workshop facilities.

Most of the technical staff and skilled operatives engaged in the project are Norwegians. However, there will be some Australians trained in anticipation of the expansion of the industry.

EXPANSION OF FISHERIES SERVICES IN PERU

The Division of Fish and Game of Peru (Dirección de Pesquería y Caza), continuing its program for the expansion of commercial fisheries, has recently established a new hatchery and a fishery laboratory and is building a fish-receiving station. 2/

The hatchery, called the Central Fishculture Station (Estación Central Piscicola), is located in Santa Eulalia. It has ponds for the culture of trout, shrimp, and silversides (pejerrey), and 30 aquariums for the rearing and study of ornamental fishes. For trout culture it also has a hatchery room with capacity for one million fertilized eggs. The trout fingerlings cultivated there are used to stock mountain streams, where a trout fishery has been developed to provide fresh fish for the inhabitants of the mountain regions. Carp culture will also eventually be practiced in the hatchery, and a great number of minnows (gambusia) have already been reared for distribution in swamps and ponds to combat the malarial mosquitoes. The hatchery also has an Experimental Zoological Park.

The fisheries laboratory, called the Technology and Biology Laboratory (Laboratorio de Tecnología y Biología), is located at the Fish Receiving Station (Terminal Pesquero) at the port of Callao. Its technological services include inspection of quality standards of all fishery products for export and domestic consumption, and studies on

2/ Revista Agropecuaria del Perú (Organo del Ministerio de Agricultura. Departamento de Propaganda, Biblioteca y Publicaciones, Lima) Vol. I, No. 1 (Jan./Mar. 1950), pp. 70-73.

the development of new fishery industrial products and on fishing methods. Ecological studies of the fishing zones of the Peruvian coast are also contemplated.

When the Fish Receiving Station under construction in Lima is completed, the distribution and marketing of fish in the capital will be improved. The station will have three freezing rooms and ten cold storage rooms, each with a capacity of 10 tons. It will also be provided with a flake-ice factory having a daily production of 50 tons.

Both the Laboratory and the Receiving Station are joint projects of the Peruvian Government and the Interamerican Co-operative Service for Food Production (Servicio Cooperativo Interamericano de Producción de Alimentos - SCIPA). With the addition of these facilities, the Peruvian Government is now better equipped to meet the needs of its developing fisheries.

FISH CULTURE IN CONJUNCTION WITH IRRIGATION IN NORTHEASTERN BRAZIL

Fish is of utmost value in the diet of the 7,800,000 people (1946 estimate) living in the dry lands of northeastern and eastern Brazil. In an area of 834,670 square kilometers extending into several states, fish is almost the only source of food during the heavy droughts and makes better diets possible during periods of regular rain. Consequently, fish have been cultivated in this region since 1932 by the Fishculture Service, which functions under the National Department of Drought Control of the Ministry of Communications and Public Works (Serviço de Piscicultura, Departamento Nacional de Obras Contra as Sêcas, Ministério de Viação e Obras Publicas).

The ponds and reservoirs built by the Department for irrigation purposes are stocked by the Fishculture Service with edible species of fish. For stocking the Service uses a few species from the local seasonal rivers, several from the São Francisco River (the only river in the region with a permanent course), and species from the Amazon River Basin (Bacia do Rio Amazonas) which runs further north. These species, with the exception of those from the Amazon Basin, do not spawn naturally in lakes and ponds, for reasons as yet unknown, and an efficient method for obtaining fertilized eggs, fry, and fingerlings in quantity from the rivers has not yet been developed. Moreover, since the spawning period is short and sudden, it is difficult to obtain milt and roe for artificial fertilization.

To overcome the difficulties of securing fertilized eggs and young fish, the Fishculture Service is utilizing the hypophysis method. This consists of injecting into the dorsal side of fish which are getting ready to spawn a solution of ground hypophysis (the pituitary body taken from fish preparing to spawn and mixed with physiological solution or other media). This injection, in males and females, induces spawning of fish kept in tanks or large aquariums and fertilized eggs can thus be made available. These eggs are then hatched following common fishculture procedures, and the fingerlings are used for stocking. 3/ The fifteen species most commonly used are listed in the following table:

3/ Source: Azevedo, P. de, and Vieira, B. Borges. "Realizacões da Comissão Tecnica de Piscicultura - 1940." Reprint from Boletim da Inspetoria Federal de Obras Contra as Sêcas, Vol. 13, No. 2. Publicacão 91, Servico de Piscicultura. Inspetoria Federal de Obras Contra as Sêcas, Ministério da Viacão e Obras Publicas, Rio de Janeiro, Brazil, 1940. 18 pp., plates and tables.

Number of Fingerlings, by Species, Distributed in Reservoirs and Ponds by the Fishculture Service (1933 - July 1950) 4/

Scientific Name	Brazilian common name	Origin	Number distributed	Percentage of total number distributed
				(Percent)
Pimelodus clarias . . .	Mandí	São Francisco River	351,423	31.375
Myleus sp.	Pacú	São Francisco River	142,400	12.714
Astronotus ocellatus . .	Apaiari	Amazon River	143,933	12.851
Prochilodus argenteus.	Curimatã comum	Local seasonal rivers	96,461	8.612
Plagioscion surinamensis	Pescada cacunda do Amazonas	Amazon River	91,833	8.199
Trachycorystes sp. . .	Cangati	Local seasonal rivers	68,370	6.104
Cichla ocellaris	Tucunaré comum	Amazon River	71,589	6.391
Prochilodus sp.	Curimatã pacú	São Francisco River	60,682	5.417
Leporinus sp.	Piáu comum	Local seasonal rivers	43,451	3.879
Leporinus sp.	Piáu preto	São Francisco River	21,696	1.937
Cichla temensis	Tucunaré pinima	Amazon River	19,497	1.741
Arapaima gigas	Pirarucú	Amazon River	5,932	0.529
Pachyurus sp.	Pescada do São Francisco	São Francisco River	2,678	0.239
Plagioscion squamosissimum . . .	Pescada branca do Amazonas	Amazon River	117	0.010
Conorhynchos conirostris	Pirá	São Francisco River	29	0.002
Subtotals		São Francisco River	578,908	51.684
		Amazon River	332,901	29,721
		Local seasonal rivers	208,282	18.595
Total			1,120,091	100.000

4/ Sources: Menezes, R. Simões de. Pesca e Piscicultura na Zona Sêca do Brasil. Publicação 115, 12 pp. Serviço de Piscicultura, Departamento Nacional de Obras Contra as Sêcas, Ministerio da Viação e Obras Publicas, Fortaleza, Ceará, Brazil, 1948 (Mimeographed).

Menezes, R. Simões de. Sumario das Atividades Passadas, Atuais e Futuras do Serviço de Piscicultura. Servico de Piscicultura, Fortaleza, Ceará, Brazil, 1950. 8 pp. Unpublished.

The reservoirs and ponds are both publicly and privately owned. However, catch statistics are available only from the public ones, which are supervised by the National Department of Drought Control. The productivity of four species introduced from the Amazon Basin is high, as is shown in the following table.

Scientific name	Brazilian common name	Number of reservoirs stocked	No. of fingerlings distributed	No. of fish caught
Cichla ocellaris	Tucunaré comum	13	9,728	646,844
Plagioscion surinamensis	Pescada cacunda do Amazonas	11	5,030	491,419
Astronotus ocellatus . . .	Apaiari	3	8,926	81,154
Arapaima gigas	Pirarucú	3	2,054	5,895
Total		30	25,738	1,225,312

The fingerlings were planted from 1939 to 1945 and the catch was taken from 1941 to 1947, the time of planting and catching varying with the reservoir.

The Fishculture Service has proved economically successfully. Over the period 1933-47, it was calculated that the value of the production of 32 public reservoirs exceeded the cost of operation of the Fishculture Service during the same period.

Besides fishculture work, the Service has conducted research on several species of fish, studies of different bodies of water, and other investigations with a view to the improvement of fishculture methods. It operates two fishculture posts - one in Fortaleza, State of Ceará, which is its headquarters, and the other in Lima Campos in the same state. Since its inception, the Service has published 132 papers on various aspects of its work. Its activities are continually developing, as the number of ponds and reservoirs being built in the area gradually increases.

FISHERIES RESEARCH AND INSPECTION IN NEWFOUNDLAND

Before the union of Newfoundland with Canada in April 1949, the Newfoundland Government Laboratory carried on biological research, some technological and hydrographical research, fish and fish products analyses, and canned and fresh fish inspection.

After the union, the Fisheries Research Board of Canada established the Newfoundland Biological Station, which maintains headquarters in the laboratory building at St. John's to carry on the biological and hydrographic section of the laboratory. Most of the staff from the original institution was transferred to the new station, which employed six biologists in 1949.

The responsibility for technological research and services was taken over by the Atlantic Fisheries Experimental Station of the Fisheries Research Board at Halifax, Nova Scotia, while the fisheries analytical and inspection work is to be continued by a Fish Inspection Laboratory operated by the federal Department of Fisheries.

5/ Source: Annual Report of the Fisheries Research Board of Canada for the Year 1949. Fisheries Research Board of Canada, Ottawa, Ontario, 1950.

Biological research of the former Newfoundland Government Laboratory dealt mainly with salmon and groundfish. Now that it is a station of the Fisheries Research Board, groundfish investigations are being enlarged, together with the hydrographic exploration covering the Labrador current and waters of the Grand Banks. The salmon research program is being integrated with the Board's general Atlantic salmon investigations.

While the Newfoundland Biological Station will concentrate its research on groundfish -- principally cod, haddock, American plaice, and rosefish -- investigations will be gradually expanded to cover the inshore fisheries. The groundfish investigations are designed to obtain a better knowledge of the offshore populations, through exploratory fishing, hydrographic studies and life history studies, and to determine ways of recognizing major changes in abundance of these populations.

SCHOOL OF NATURAL RESOURCES ESTABLISHED IN MICHIGAN, U.S.A.

The University of Michigan, Ann Arbor, Michigan, U.S.A., has recently established the School of Natural Resources, which replaced the former School of Forestry and Conservation with its three departments - Forestry, Wood Technology, and Wildlife. While these departments are being continued in the School of Natural Resources, two new departments have been added - namely, Fisheries and Conservation.

The University of Michigan has long been recognized for its training in fishery biology, particularly that pertaining to fresh water fisheries management. Formerly, this instruction was given by the Department of Zoology. This recent reorganization increases the importance of fisheries science at the University and broadens the academic training available in this field. The new Department of Fisheries will center its teaching and research about the improvement of fish production in inland waters.

DEPARTMENT OF OCEANOGRAPHY FOUNDED IN TEXAS, U.S.A.

The Agricultural and Mechanical College of Texas (College Station, Texas, U.S.A.) established a Department of Oceanography in the School of Arts and Sciences in January 1949. The new department was founded to fill the need for a central agency to teach oceanography and to undertake studies of the Gulf of Mexico. First classes began in February 1950 and a full curriculum leading to a graduate degree in oceanography was offered in September 1950.

The curriculum includes courses at the senior and graduate level only. Three types of training are available. The first is an introductory or survey course for seniors in the biological or physical sciences or in engineering. The second is a group of courses which graduate students, working toward degrees in other fields, may use as a minor. Finally, there is a full curriculum leading toward a graduate degree in oceanography.

6/ Source: Information supplied by Dr. Dale F. Leipper, Head of the Department of Oceanography, Agricultural and Mechanical College of Texas, College Station, Texas, U.S.A.

The initial academic staff has been selected, and a specialist in each of the five major aspects of oceanography - biological, physical, geological and chemical oceanography and marine meteorology - considered by the Department.

Besides its teaching responsibilities, the Department of Oceanography plans to carry on considerable research, employing in this work the academic staff and graduate students. The Department has been given responsibility for a study of the physical oceanography of the Gulf of Mexico under the present extensive biological and oceanographical investigations of that region being conducted by the United States Fish and Wildlife Service. The Service is using the research vessel "Alaska" for these studies.

In June 1950, under a contract between the Hydrographic Office of the United States Navy and the Texas A and M Research Foundation, the Department of Oceanography began a systematic survey of the Gulf of Mexico to procure information on oceanography and meteorology.

In recent years the staff of the College has carried on considerable oyster research under the direction and sponsorship of the Texas A and M Research Foundation. This work involved investigations on the causes of oyster mortality along the coast of the Gulf of Mexico. A continuing study is being made by the Foundation through the Department of Oceanography, which is specifically directed toward measuring the mortality effects of certain newly discovered diseases of oysters and the impact of these mortalities on the oyster industry. Field headquarters for the oyster research are located at the completely equipped laboratory of the Research Foundation at Grand Isle, Louisiana. This laboratory is also available to the Department of Oceanography for the other research projects.

Fisheries Division Activities

The Regional Fisheries Officer for Latin America, Dr. B.F. Osorio-Tafall, recently visited Venezuela, Colombia, and Ecuador where he assisted officials in dealing with problems of the fisheries industry and in formulating requests for technical aid under the Expanded Technical Assistance Program. He reports increased activity in the industrialization of Colombia's fisheries. The government-sponsored Industria Colombiana de Pesca Maritima (ICOPESCA) has contracted with a Swedish concern for the delivery of three fishing boats and equipment for a fish plant to be located in Buenaventura. The plant is to be fitted with refrigerated storage, filleting, ice and freezing, canning, and reduction facilities. The boats were designed by Jan-Olof Traung, now a member of the FAO Fisheries Division. ICOPESCA has also contracted for the services of a German concern from Cuxhaven and Hamburg; recently there arrived in Colombia two German cutters which were immediately put into use for a fisheries survey of the Colombian Caribbean coast, beginning with the section between Cartagena and the Guajira Peninsula. Dr. Osorio-Tafall, en route from Ecuador to Washington, spent a few days in Panama, Costa Rica, and Mexico for discussions with fisheries officials.

The Regional Fisheries Officer for Asia and the Far East, Dr. G.L. Kesteven, attended a meeting of the Indo-Pacific Fisheries Council's Executive Committee in Manila during the week beginning 28 August. The other members of this committee are Dr. J.D.F. Hardenberg of Indonesia and Dr. D.V. Villadolid of the Philippines. Just prior to this meeting, Dr. Kesteven, at the request of the governments concerned, made a tour of Singapore, Indonesia, Ceylon, India, and Pakistan. On this tour he continued his advisory work and discussed with government officials matters concerning the work of the Indo-Pacific Fisheries Council, chiefly as a follow up of the Council's second meeting held in Cronulla, Australia, in April. He also assisted officials in formulating requests for technical assistance under the Expanded Technical Assistance Program.

Mr. Horacio Rosa, Jr., of the Biological Branch presented a paper at the annual meeting of the American Fisheries Society at Memphis, Tennessee, 11-13 September 1950. The paper, entitled "Considerations for a new approach to the taxonomy of marine fish," discusses the disagreement concerning the numbers of species of commercially important fish and their distribution and suggests that taxonomists co-ordinate their studies on an international basis.

The FAO Yearbook of Fisheries Statistics - 1948-49 has been completed by the Division and will be available for distribution towards the end of the year. This second FAO yearbook of fisheries statistics continues and expands the data published in the yearbook of 1947, which were supplemented through 1948 and 1949 by statistics published in the Fisheries Bulletin. It contains both general surveys and detailed statistics. It gives information on world landings by continent and country, estimated disposition of landings, external trade, number of craft and fishermen, production, consumption, and prices. As an aid in identifying species of fish, crustaceans, molluscs, and other aquatic organisms referred to by local common names in the landings tables, a nomenclature section lists scientific and common names by countries.

Notes on Publications and Films

FILMS

Persons making an effort to improve fisheries have to rely mainly on information distributed in the form of printed matter. Films, however, have proved to be an effective supplement to the written word, especially for fisherman or fish processors.

Fisheries administrators long ago realized this and a number of instructional films have been produced. Such films serve the very useful purpose of creating interest in the adoption of new or improved methods. Once their interest is aroused, persons are likely to seek more detailed information from fisheries officers, publications, etc.

Since film production is expensive and time consuming, it is important that the maximum use be made of films already available. The FAO Fisheries Division is therefore eager to encourage international exchange of such films and will, from time to time, present brief reviews of films related to fisheries and available for international distribution.

The rental or loan of films from one country to another is often difficult. In many cases available funds might best be used for the purchase of prints. Compared with the production cost of a film, the expense involved is generally small and the great educational value of showing such films is well worth it.

One difficulty is that the films may not be available with titles or commentary in the language desired. However, fisheries officers will often be able to accompany the film with their own commentary, giving the essential information.

Anyone interested in the films listed below should contact the distributor or producer directly. The FAO Films Officer, 1201 Connecticut Avenue, Washington 6, D.C., U.S.A., will be glad to render assistance whenever needed.

CALLER HERRIN . Producer: Colonial Office of Information, 21 Soho Square, London, W. 1, England. Distributor: British Information Services; contacted through British Embassies, Legations, and Consulates. Special commercial arrangements exist in some countries.

Technical data: 16 mm., black and white, sound, 19 minutes running time, commentary and titles in English.

Price: 16 mm. print: US$47.50; rental: US$2.50 per day. Free loan arrangements may be made for governments through FAO Films Officer.

Description: The film shows the operation of herring drifters from various British fishing ports. Several sequences taken on the vessels describe the shooting and hauling of the nets; others show the auctioning of the herring and packaging for

the fresh market. Kippering of herring is filmed, both according to the conventional process using hand splitting and large smoking kilns and according to the more modern process using splitting machines and mechanized smoking equipment. Other sequences show herring preserved by salting, freezing, and klondyking.

Although some details of the fishing operations and manufacturing processes are included, they are of necessity too short to give a complete illustration of the techniques used; however, the film gives a good over-all impression of the methods in use in the British herring fisheries industry.

SALMON RUN. Producer: Canadian National Film Board, Ottawa, Ontario, Canada, and Leon S. Shelly, Vancouver Motion Pictures, Vancouver, British Columbia, Canada. Distributor: Canadian National Film Board, Ottawa, Ontario, Canada, and CNFB offices in New York and Chicago, U.S.A.

Technical data: 16 mm., color, sound, 21 minutes running time, commentary and titles in English.

Price: 16 mm. print: $150.00; rental: $5.00.

Description: The film was produced in co-operation with the International Pacific Salmon Fisheries Commission, New Westminster, British Columbia, Canada, a joint commission established by Canada and the United States of America for the protection of the sockeye salmon (Oncorhynchus nerka) of the Fraser River System. It gives glimpses of the commercial salmon fishery in the Gulf of Georgia and the lower reaches of the Fraser River, such as the operation of purse-seine and gill-net boats and unloading of salmon at the canneries, as well as fishing methods and salmon smoking employed by native Indians. It then follows the upstream migration of the sockeye salmon in the Fraser and its tributaries to the spawning areas in the interior of British Columbia and shows in detail the obstruction which existed for many years at Hell's Gate in the Fraser Canyon as a result of a mountain slide. The engineering and biological research of the International Commission in alleviating the obstruction and studying the life history of the salmon is also shown in the film, which describes the procedure followed by this body in designing fishways at this difficult point of passage, and shows temporary measures employed to get the salmon past this region, for instance the brailing of salmon to flumes which bring them past the obstructions. The tagging of salmon by biologists to trace and learn times of migration are shown. Scenes from the spawning grounds vividly illustrate changes which occur in the body form and color of the sockeye during the period of migration from the ocean. A feature of the film is the portrayal of the pairing of the salmon during the spawning period and their behavior.

The film pictures very completely the migration of the salmon and the achievements of the conservation work of the International Commission.

RED RUNS THE FRASER. Producer and distributor: Canadian National Film Board, Ottawa, Ontario, Canada.

Technical data: 16 mm., color, sound, 11 minutes running times, commentary and titles in English.

Price: 16 mm. print: $75.00; rental: $2.50.

Description: This is an abbreviated version of the above-mentioned film, "Salmon Run."

SHELL-FISHING. Producer and distributor: Encyclopaedia Britannica Films, Inc., Wilmette, Illinois, U.S.A.

Technical data: 16 mm., black and white, sound, 392 feet, 10 minutes running time, commentary and titles in English.

Price: 16 mm. print: US$50.00; rental: US$2.50 for 1, 2, or 3 days.

Description: This film was produced in co-operation with Dr. Wallace W. Atwood of Clark University, Worcester, Massachusetts, U.S.A. It describes briefly the clam, oyster, crab, and lobster industries of the northeastern coast of the United States of America. Animated maps show the location of these industries. Explanations of the growing of oysters and clams are given. The film shows the digging of clams and the work done in clam-shucking plants; the transplantation of oysters, oyster fishing with dredges, a large oyster shucking plant including the packing of fresh oyster meat in sealed metal cans, and shipping in ice; and crab fishing by use of trot lines and a packing plant for cooked fresh crabmeat. The final sequences present the capture of lobsters in lobster pots and the shipping of live lobsters packed in wet seaweed and ice, as well as the picking and packing of cooked lobster meat.

PUBLICATIONS

Australian Journal of Marine and Freshwater Research, Vol. 1, No. 1 (April 1950). Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, Melbourne, C. 2, Victoria, Australia. 154 pp., illus. In English.

This is the first number of a periodical designed to provide a medium for publishing the results of original investigations on marine, estuarine, and freshwater fisheries and related subjects. Succeeding numbers will be published as the accumulation of suitable material dictates. This issue contains seven papers, three of which report the results of investigations on under-water fouling. The others deal with a biological investigation of the anchovy (Engraulis australis), condition of the barracouta (Thyrsites atun) fishery in Australian waters, bacteriology of shark spoilages, and the effects of the orientation of cultch material on the setting of the Sydney rock oyster.

Scientific and Technical Reports No. 1. Edited by H. Lissner. Israel Ministry of Agriculture, Department of Fisheries, Sea Fisheries Research Station, Haifa, 1948. 25 + 19 pp. In English and Hebrew.

The report contains introductory remarks on the work of the Sea Fisheries Research Station of the Israeli Department of Fisheries and two technical papers entitled "Report on Two Trips to the Gulf of Alexandretta" and "Description of the Fishing Grounds of the Coast of Israel." The first paper describes and assesses the possibilities of fishing in the Gulf of Alexandretta with a typical North Atlantic steam

trawler. It was found that the trawls were too heavy and that the meshes of the nets used were too large, but that changes are possible to make such a vessel suitable. The brief surveys indicate that the fish resources in the Gulf of Alexandretta are similar to but more plentiful than those found off Israel. The second reports the initial results of a continuing investigation to determine the extent of the fishing grounds and which are the most productive. Species composition of the commercial catch in the four statistical regions along the coast is given, the most important species being red mullet (Mullus sp.), red bream (Pagellus erythrinus), hake, (Merluccius merluccius), and croaker (Sciaena aquila).

The Sea and Its Mysteries. John S. Colman. G. Bell and Sons, Ltd., London, 1950. 285 pp. In English.

The author deals with the comprehensive subject of oceanography simply and authoritatively under the following general headings: Salinity, Temperature, and Deep-Water Circulation; Currents, Waves, and Tides; Minor Constituents of the Sea, Plant Plankton, and Fertility; Animal Plankton; Life in the Depths; Coral Reefs; Life between Tide-marks; Fish, Whales, and Their Migrations; Oceanography and Research; Research and the Fisheries; and The Amateur Naturalist at Sea.

The Fisherman's Encyclopedia. I.N. Gabrielson (Editor) and F. Lamonte (Associate Editor). Stackpole and Heck, Inc., New York, N.Y., and Harrisburg, Pennsylvania, U.S.A., 1950. xxix + 698 pp., 18 plates, fig. In English.

This is a compilation of information by 65 contributors on different aspects of game fishing in salt and fresh water. It is organized into sections covering 28 major subjects. The introduction is a short dissertation on the biology of fishes; Section I lists the salt- and fresh-water game fish with colored plates of the North American species; Section II discusses fishing equipment and fishing methods, and includes colored pictures of types of flies, streamers, plugs, spoons, spinners, and odd lures; Section III deals with fishing craft; Section IV discusses fishery management methods; Section V gives information on where to fish for salt- and fresh-water fish; Section VI covers the problems of when and how to fish; Section VII includes miscellaneous topics such as sportsmanship in fishing, fly fishing, rod making, photography for fishermen, tents and camp shelters, building a fisherman's library with a list of the literature available on fishing topics, and finally, a glossary of names and terminology.

Australian Fisheries. Edited by I.G. MacInnes. Halstead Press Pty., Ltd., Sydney, Australia, 1950. 3 parts, 103 pp., 6 plates, 6 fig., 1 map. In English.

This handbook was prepared for the Second Meeting of the Indo-Pacific Fisheries Council held at Sydney in April 1950. It is compiled from the contributions of several Australian fishery experts and is organized in three parts, as follows: Part I, Background: Geographic setting of Australian fisheries, oceanography, fauna; Part II, The Fisheries: Marketing and distribution, processing; Part III, Administration, research, development. Plates give illustrations of the important commercial species, together with their scientific and generally accepted common names. A bibliography covering most of the topics discussed is also included.

Officielle Lijst der Belgische Vissersvaartuigen 1950 (Official List of Belgian Fishing Craft, 1950). Ministry of Transport, Belgium. 59 pp. In Flemish.

This publication lists the units of the fishing fleet of Belgium on 31 December 1949, giving for each craft, by harbor, old and new registration number, name, net and gross tonnage, shipbuilding yard, year of construction, make, horsepower, year of manufacture, number of engine, ownership, and electronic equipment (echo sounder, telephone, wireless, direction finder). In addition, an alphabetically arranged list of owners' names and a list of the shipbuilding yards are included. A statistical table summarizes the information on number, horsepower, and tonnage for the four harbors, according to the major categories of fishing craft.

Nineteenth Annual Report, 1948-49. Department of Fisheries, Ottawa, Canada. 139 pp. In English.

The marine and inland fisheries for 1948-49 are surveyed and data on production, disposition of catch, exports and imports are shown. Short reviews are given of the activities of the Fisheries Department of Canada and the work of its Fish Culture Development Branch, Fish Inspection Laboratories, the biological and technological investigations of the Fisheries Research Board of Canada, the Fisheries Prices Support Board, the International Pacific Salmon Fisheries Commission, and the International Fisheries Commission. Finally, the report contains data on the Pribilof Sealing operations as well as financial statements on the income and expenditures of government activities regarding fisheries and statistical data on Pacific salmon fisheries and on fish cultural developments.

The British Fishing Industry. Edited by A.C. Hardy. The Continental Daily Mail, Third Special British Fishing Supplement, 21 March 1950. 14 pp., illus. In English.

This special issue of a daily newspaper contains articles on the various fishing boats in use in the United Kingdom and on their equipment. It describes a herring filleting machine, new trawl planes, a whale catcher, etc.

Review of Kenya Fisheries 1946 and 1947. Hugh Copley. Government Printer, Nairobi, Kenya, 1950. 41 pp. In English.

This sequel to an earlier publication, "Review of the Kenya Fisheries up to the Year 1945," brings the material contained therein up to date for 1946 and 1947. The review covers such subjects as staff, offices, new ordinances, revenue from trout fishing, biological surveys, hatcheries, etc. Separate reports on a score of trout-fishing rivers are given, together with work in stocking of dams, and on fisheries research in Lake Victoria. There is a short review of the sea fisheries, together with statistics on trout fishing and on the tilapia (Tilapia esculenta) fishing in the Kenya waters of Lake Victoria.

Histoire de la grande pêche de Terre-Neuve. (History of the Newfoundland Fisheries). R. de Loture. Librairie Gallimard, Paris, 1949. 254 pp., illus., glossary. In French.

This book gives an account of the fisheries off Newfoundland, particularly as carried out by the French, from their origin to the present, and describes the shore as well as bank fisheries. The various treaties, including those concerning the "French Shore," are reviewed. Detailed descriptions are given of the fishing methods used by sailing vessels and trawlers; the codfish industry and trade is discussed; and a glossary of some 300 French navigation and fisheries terms is included.

Fishery Resources of the U.S.S.R. - Significance in the Soviet Economy. Eugenie Bouianovsky. International Reference Service, Vol. VII, No. 22 (May 1950). Office of International Trade, U.S. Department of Commerce, Washington, D.C., U.S.A. 15 pp. In English.

This paper presents a short survey of the marine and inland fisheries resources of the U.S.S.R. A short introduction gives the institutional features of fisheries organizations; then the resources are analyzed on a regional basis.

A short statistical review is given of fishpond farming, whaling, and the utilization of seaweeds, as well as fisheries under the Five-Year Plan, fish preserving, and processing. Shipbuilding, manufacture of fishing nets, the production of shipping containers, and refrigeration facilities are discussed. Finally, a short analysis, with accompanying statistics, is given of imports and exports of fisheries products from the U.S.S.R. for 1913 and 1929-37. A table on United States imports of fish and fish products from the U.S.S.R. in 1934-38 is also included.

Berichte der Deutschen wissenschaftlichen Kommission für Meeresforschung, Neue Folge, Band XII, Heft 1 (Reports of the German Scientific Marine Research Commission). E. Schweizerbart' sche Verlagsbuchhandlung (Erwin Nägele), Stuttgart, Germany, 1950. 137 pp., fig., tables. In German.

This issue contains a report on scientific investigations of the German trawl fishery in the Baltic during World War II by P. Fr. Meyer, a study by Rudolf Kaendler of the annual occurrence and irregular appearance of fish fry, of medusae and larvae of decapods in the Fehmarn Belt during the years 1934-43, a report of the regulation of plaice stocks in the Bay of Helgoland in 1949 by A. Kotthaus, as well as his third study on Norway haddock (rose fish). Obituaries of the German scientists, Hermann Henking and Erich Fischer, with lists of their publications, also appear.

Indo-Pacific Fisheries Council Proceedings (First Meeting, 24-31 March 1949, Singapore). Available from the Food and Agriculture Organization of the United Nations, 1201 Connecticut Avenue, Washington, D.C., U.S.A. 143 pp., illus. In English.

This publication contains the proceedings, the working papers, contributed papers, and symposium papers of the first meeting of the Indo-Pacific Fisheries Council held in Singapore, 24 to 31 March 1949. The working papers include programs of statistical work and socio-economic research for the fisheries of Southeast Asia, fish marketing in Batavia, and sections on zoological nomenclature and on technology. Contributed papers include: Notes on the Fish Fry Industry of China, Oceanography in the Indonesian Archipelago, Indian Fisheries, The Organization and Utilization of Plankton Investigations, Korean Fisheries, Rastrelliger kanagurta (Ruppell)-its Fishery and Biology, The Problems of Fish Storage and Refrigeration in Southeast Asia, General Review of the Fish and Fish Culture in the Continental Waters of Indo-China and Projected Programme of Work, An Outline of a Preliminary Survey of the Socio-economics of the Fishing Industry of Hong Kong, The Economic Algae of Malaysia and their Applications. Symposium Papers include: A Survey of the Pelagic Fisheries of the World, Methods of Biological Research on Pelagic Fish Resources, and Development of Pelagic Fisheries.

Proceedings of the United Nations Scientific Conference on the Conservation and Utilization of Resources (17 August to 6 September 1949, Lake Success, New York) Vol. I,

Plenary Meetings. United Nations, Department of Economic Affairs, Lake Success, New York, U.S.A., 1950. 431 pp., illus. In English and French editions.

This is the first of eight volumes of the Proceedings of the United Nations Scientific Conference on the Conservation and Utilization of Resources which brought together over 700 scientists from 50 countries to consider more than 500 scientific papers. Included in Volume I is information on the background and objectives of the Conference; preparatory work; information services; program; conference method; report on the Conference; officers, contributors, participants and secretariat; and detailed proceedings of the plenary meetings. Volume VII, which will contain the material on wildlife and fishery resources, is expected to be issued shortly.

Proceedings of the Gulf and Caribbean Fisheries Institute. Second Annual Session, Miami Beach, November 1949. University of Miami Marine Laboratory, Coral Gables, Florida, U.S.A., March 1950. 132 pp. In English.

Twenty-nine papers prepared for the Second Annual Session of the Gulf and Caribbean Fisheries Institute held in November 1949 are contained in this publication. Also included are six papers summarizing the proceedings of sessions held on oyster fisheries, Caribbean fisheries, Gulf fisheries, and economics, and those of a general session. The papers cover many diverse topics associated with problems of fisheries research and development in the Gulf of Mexico and the Caribbean Sea. Some of the papers included are: Recent Research on the Florida Oyster; Studies on the Edible Oyster of Puerto Rico; An Outline for a Trinidad Shark Fishery; Marine Fisheries of the Caribbean; Florida Mullet Research Program; Florida Sponge Industry; Caribbean Crawfish Industry and Its South African Competitor; Packaging and Marketing Airborne Seafoods; Potential Products from Gulf or Sargassum Weed; Production of Red Tide (Gymnodinium brevis) in the Laboratory.

Annual Report 1949. International Pacific Salmon Fisheries Commission, New Westminster, British Columbia, Canada, 1949. 35 pp., illus. In English.

The 1949 Report begins with a brief account of the history and purpose of this joint United States-Canadian Commission, established in 1937 for the protection, preservation, and extension of the sockeye salmon (Oncorhynchus nerka) fishery of the Fraser River system. The 1949 sockeye salmon fishery regulations recommended by the Commission and adopted by the two governments are outlined. There follows an account, including catch statistics, of the Canadian and United States fisheries during the season. The report also summarizes the scientific investigations carried on by its biological and engineering staffs during the year and includes summaries of the escapement of sockeye salmon to the various spawning grounds of the Fraser River system.

Bulletin III. International Pacific Salmon Fisheries Commission, New Westminster, British Columbia, Canada, 1950. 129 pp., illus. In English.

Bulletin III contains two papers on the salmon fishways at Hell's Gate on the Fraser River in British Columbia. The first paper, "A Biological Study of the Effectiveness of the Hell's Gate Fishways," by G. B. Talbot, is an analysis of the data obtained by the biological staff from marking experiments to determine the effectiveness of the new fishways in eliminating the periodic block to the passage of salmon. The second paper, "Variations in Flow Pattern at Hell's Gate and Their Relationships to the Migration of Sockeye Salmon," by R.I. Jackson, analyzes the

physical data obtained at Hell's Gate by the engineering staff from studies designed to determine the causes of the obstruction.

Fluctuations in Abundance of Columbia River Chinook Salmon (Oncorhynchus tschawytscha) 1935-45. Ralph P. Silliman. Fishery Bulletin 51. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1950. 21 pp., 11 fig. In English.

The bulletin reports on a study of the 1935-45 catches of Chinook salmon per fisherman-week by gill nets in the lower part of the Columbia River in the States of Oregon and Washington. Cannery records of individual daily deliveries to fish-receiving stations were used. Data on catch per fisherman-week were summed up by seasons and linked by the "chain link" method. The total fishing effort expended was calculated and found to decline during the period studied. The index of catch of per unit-of-effort was converted to an estimate of the size of the run. With these data, the author calculates the mean estimated return or size of the returning population, the mean fishing mortality, and the range of escapement (escaping population) through the commercial fishery. Positive correlations, though not statistically significant, were found for two variables-stream flow and temperature, and the size of the returning salmon population.

Biology of the Atlantic Mackerel (Scomber scombrus) of North America (Part II - Migrations and Habits). Oscar E. Sette. Fishery Bulletin 49. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1950. ii + 107 pp. In English.

This paper discusses the migrations and habits of the Atlantic mackerel(Scomber scombrus). The writer outlines the distribution of the species during the fishing season, which is in the spring and summer, and theorizes on the winter habitat. Information is given on schooling of these fish which is dependent upon vision and hence subject to variations with the diurnal cycle of light intensity. Fat content is discussed in relation to the abundance of plankton. Two separate migrating populations are identified on the basis of size composition data collected over the ten-year period from 1926 to 1935. The existence of the separate populations and the course of their migrations, as deduced from size composition, were corroborated by a series of marking experiments.

The Experiments on the Cornish Pilchard Fishery in 1947-48. William C. Hodgson and Ian D. Richardson, Fishery Investigations, Series II, Vol. XVII, No. 2, United Kingdom Ministry of Agriculture and Fisheries, H. M. Stationery Office, London, England, 1949. 21 pp., 7 fig., 10 plates., appendix. In English.

The aim of the experiments was primarily to determine whether the landings of pilchards (Sardina pilchardus) could be increased in the Cornish fishery. The report gives results obtained with the ring-net fishing method, introduced to this fishery by the investigators, and information on the distribution and biology of the species. The Cornish pilchard fishery extends from June until December and is mainly exploited by small vessels using drift-nets which are selective for the larger fish. The experiments demonstrated that ring-nets of particular specifications are suitable for this fishery and that catches could be increased with their introduction. Such nets also catch smaller sized fish than those caught by the traditional gear; these are good for canning. Other data include age and length, maturity, fat content, vertebral counts,

movement of shoals, and reaction to light. Finally, suggestions are given for future investigations.

Studies on the Pacific Pilchard or Sardine (Sardinops caerulea). Special Scientific Report: Fisheries, No. 15, United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., May 1950. 200 pp. In English.

This volume consists of six papers previously issued in limited numbers on various aspects of the scientific investigations of the sardine on the Pacific Coast of North America. These are: Structure of a Research Program to Determine How Fishing Affects the Resource; Determination of the Age of Juveniles by Scales and Otoliths; Determination of Age of Adults by Scales, and Effect of Environment on First Year's Growth As It Bears on Age Determination; Influence of Temperature on the Rate of Development of Pilchard Eggs in Nature; A Method of Computing Mortalities and Replacements; Thermal and Diurnal Changes in the Vertical Distribution and Eggs and Larvae.

Apparent Abundance of the Pilchard (Sardinops caerulea) off Oregon and Washington, 1935-43, as Measured by the Catch per Boat. John C. Marr. Fishery Bulletin 52. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1950. 9 pp., 7 fig. In English.

The author states that the quantities of pilchards which may be caught per unit-of-effort are determined by the combined effect of varying availability of fish to fishermen and fluctuations in abundance. He defines this combined effect as "apparent abundance." The paper presents the derivation of measures of relative apparent abundance of pilchards off the coast of the States of Oregon and Washington from 1935-43, using the linear relationship between boat length and tons caught per week. Indices for each season are expressed as "tons caught per standard boat-week." In the nine seasons, the catch per standard boat-week fluctuated around 140 tons; no trend is evident. A significant negative correlation is shown to exist between the catch per standard boat-week in each season and the average daily air temperature during the season. The best catches per standard boat-week tended to be made in the seasons of lowest average daily temperature.

The Effect of Fishing on Stocks of Halibut in the Pacific. William Francis Thompson. Publications of the Fisheries Research Institute of the University of Washington, University of Washington Press, Seattle, Washington, U.S.A., March 1950. xii + 60 pp., 12 fig., 5 tables. In English.

The Pacific halibut fishery, under control of the International Fisheries Commission since 1925, is one of the few great fisheries which is adapted to a close examination of the effects of fishing on the stocks of fish. The present publication explores the effect on this fishery of fishing and of practical fishing regulation since 1931. For many fisheries, production has failed to rise proportionately as fishing intensity increased. The data presented demonstrate that the major changes in the production of the halibut fishery are the result of the fishery itself.

The Rational Exploitation of the Sea Fisheries With Particular Reference to the Fish Stocks of the North Sea. G.P. Baerends. Special Scientific Report: Fisheries, No. 13. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., March 1950. 102 pp. In English.

This report is from the original Dutch of G.P. Baerends' paper (Paper No. 36 of the Department of Fisheries, Ministry of Agriculture, Fishery and Food Supply, The Hague, Netherlands, July 1947), translated by Jan Hahn and edited by Howard A. Schuck. The paper is introduced by an explanation of the need for so regulating fishing intensities that a constant optimum catch of fish will result. Baerends discusses the fishing intensities for bottom species in the North Sea during the decade 1930-40 and concludes from the statistics available that a maximum catch of 390 million kilograms of bottom fish can safely be taken annually from the North Sea. A survey is presented of the measures suggested to bring about proper protection for immature fish of the North Sea area. In addition, a summary of recommended regulations is given.

Juvenile Forms of Neothunnus macropterus, Katsuwonus pelamis and Euthynnus yaito from Philippine Seas. Charles B. Wade. Fishery Bulletin 53. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1950. 9 pp., 13 fig. In English.

This paper records little known biological data and observations on juvenile forms of three species of tuna. The juvenile forms of two of these species are compared with the young of the same species taken by Schaefer and Marr (reports in U.S. Fish and Wildlife Service, Fishery Bulletin 44, 1948, and Pacific Science, Vol. 2, No. 4, 1948) in the eastern Pacific, and those of the third species are compared with a similar species from that area. Probable spawning areas in the Philippine seas are given for the three species.

Shark Fishing Potentialities of the Philippine Seas. Herbert E. Warfel and John A. Clague. Research Report 15. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., 1950. 19 pp. In English.

This is a report on explorations and investigations to determine the potential value of sharks from the Philippine seas by the Cooperative Philippine Fishery Program of the United States Fish and Wildlife Service and the Philippine Bureau of Fisheries. Fishing was done with long lines and gill nets in selected localities from Luzon Island to the Sulu Archipelago, the bulk of the catch consisting of the tiger shark (Galeocerdo arcticus) taken exclusively by long-line gear. Liver analyses were made; vitamin A content of three species showed promising value.

The Marine Crayfishes (Spiny Lobsters), Family Palinuridae, of Western Australia - with Particular Reference to the Fishery on the Western Australian Crayfish (Panulirus longipes). K. Sheard. Bulletin 247 (Division of Fisheries, Report No. 18). Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1949. 45 pp., 1 map, tables. In English.

This paper, a study of the general biology, environment, and fishing methods of the spiny lobsters of Western Australia, is arranged in seven sections as follows: Section I lists the number and world distribution of spiny lobsters of the genera Jasus and Panulirus, which are found in significant numbers off Western Australia; Section II is devoted to the commercial species (Panulirus longipes); Section III studies the commercial fishery of the spiny lobsters of Western Australia; Section IV covers the biological and technical investigations of the spiny lobsters in Western Australian waters; and Section V presents a working key to the genus Panulirus. The final sections (VI and VII) consist of acknowledgments and a bibliography.

Effect of Underwater Explosions on Oysters, Crabs, and Fish - A Preliminary Report. Edited by L. Eugene Cronin. Publication No. 70. State of Maryland, Board of Natural Resources, Department of Research and Education, Chesapeake Biological Laboratory, Solomons Island, Maryland, U.S.A. July 1948. 43 pp., 13 fig. In English.

This publication reports on the results of an investigation of the effects of shock by explosives on marine life. It describes methods and materials used and gives data on initial deaths, delayed deaths due to injury, and the extent of organ damage to certain species at various distances from the explosive charge. Some information is also given on physical data concerning the propagation and nature of the shock wave. It is emphasized that the data presented are of an exploratory and preliminary nature and that their value lies largely in indicating the complexity of the problem and the type of future observations needed.

Les coquillages comestibles, huîtres, moules, coquillages variés (Edible Shellfish-Oysters, Mussels and Other Mollusks). Louis Lambert. Collection "Que sais-je?", No. 416. Presses Universitaires de France, Paris, 1950. 127 pp., 8 fig. In French.

This book opens with a general review of mollusks, followed by a review of the shellfish eaten in France. The first two parts are devoted to the oyster and the mussel--the different species used, their characteristics, natural beds, culture, and food and nutritional value. The third part deals with various other shellfish. The book ends with a discussion of shellfish sanitary control in France.

Poisonous Fishes of the South Seas. Translated by W.G. Van Campen. Special Scientific Report: Fisheries, No. 25. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., May 1950. 221 pp. In English.

This contains an English translation of five Japanese papers which report the results of investigations of the poisonous fishes, principally those of the South Seas, conducted by the Japanese between July and December 1941. The main object of the work was to ascertain what species of fish are poisonous, how ordinary methods of preparation for the table affect their toxicity, and how to eliminate the poison and treat cases of poisoning. The papers review past studies on poisonous fishes, list poisonous species and their toxicity, give information on the relation of freshness to toxicity, outline poison symptoms and treatments for cases of poisoning, and present methods for eliminating toxic substances. Although the investigations were not sufficiently extensive to determine what causes toxic substances to occur in certain species at certain times and in various areas, they did offer theories in this regard.

Ciguatera: Tropical Fish Poisoning. William Arcisz. Special Scientific Report: Fisheries, No. 27. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., May 1950. 23 pp. In English.

Part I is an extensive review of the literature on fish poisoning, which shows that very little is definitely known, except the symptomology, a few of the species of fish involved, and the localities in which the poisoning is prevalent. Part II reports a study made by the author on 46 fish, belonging to six species, collected near St. Thomas, Virgin Islands.

El Mar de Solis y su Fauna de Peces. I Parte. El Mar de Solis (The Sea of Solis and Its Fish Fauna. Part I, The Sea of Solis). F. de Buen. Publicaciones Científicas,

Vol. 1, No. 1. Ministerio de Industrias y Trabajo, Servicio Oceanográfico y de Pesca (S.O.Y.P.), Montevideo, Uruguay, July 1949. 43 pp., 15 fig. In Spanish.

This is a study of different aspects of the La Plata River (Río de la Plata) to which the author gives the new name of Sea of Solis (Mar de Solis). An explanation for this name is given, followed by a study of its origin; early geology and paleontology, called paleotalasography; present morphology and some oceanographic observations. This publication is the first of a series on the marine waters and fauna of Uruguay.

The Pearl Fishery of Venezuela. Paul S. Galtsoff. Special Scientific Report: Fisheries, No. 26. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., May 1950. 26 pp., illus. In English.

In 1948, the writer made a two-month trip at the invitation of the Venezuelan Government to the pearl oyster grounds in the vicinity of Margarita Island to inspect the methods of fishing, observe the appraisal and sale of pearls, and to obtain an understanding of the government management of the pearl fishery. The resulting report contains information on the history of the fishery; present condition of the fishery, including location of pearl oyster banks, method and season of fishing, shucking of oysters, division of proceeds, selling of pearls, market for pearls, economic importance of the pearl fishery; biology and conservation of the pearl oyster; and suggested plan of biological studies.

De Viscultuur in de Kustvuvers op Java (Fishculture in salt-water ponds in Java). W.H. Schuster. Publicatie No. 2. Onderafdeling Binnenvisserij, Departement van Landbouw en Visserij, Djakarta, Java, 1949. 227 pp., illus. In Dutch with English summaries.

The author reviews the fish-farming practices in the salt-water ponds (tambaks) of Java and Madura. In 36 concise chapters he deals with nearly every important aspect of these activities. He reviews the culture of the milkfish (Chanos chanos), or the "bandeng" as it is known in Indonesian, and also comments on the culture of mullets, catfishes, snappers, and eels.

In Java and Madura about 250,000 people earn their living by raising fish in tambaks. Ponds with a total area of about 80,000 hectares produce about 15 million kilograms of seafood a year.

Fortschrittliche Karpfenteichwirtschaft - Ergebnisse 20 Jähriger Untersuchungen auf dem Gebiete der Teichforschung (Progressive Management of Carp Ponds - Data Based on 20 Years of Pond Research). Wilhelm Wunder. E. Schweizerbart'sche Verlagsbuchhandlung (Erwin Nägele), Stuttgart, Germany, 1949. vi + 385 pp., 11 plates. In German.

This is a thorough treatise on carp farming based on 20 years of research. Approximately half of the book deals with the natural and artificial food of carp. The principles controlling fish production in carp ponds are set out in their complex interrelationships of stock density, natural food, and added fodder. Also discussed are changes in body form as a result of different environments, hereditary differences, and the relationship between size of fish and area of ponds.

How to Build a Farm Pond. W.S. Atkinson. Leaflet No. 259. United States Department of Agriculture, Washington, D.C., U.S.A., 1949. 8 pp., 4 fig. In English.

The author explains how to build and maintain a good farm pond formed by an earthen dam. Recommendations are for ponds with watersheds of 30 acres or less. They are intended as a guide in building a small dam to retain water for farm use and for fish culture.

Publicaciones del Instituto Español de Oceanografía - Años 1916 a 1947 (Publications of the Spanish Institute of Oceanography - Years 1916 to 1947). Instituto Español de Oceanografía, Madrid, Spain. 22 pp., 1 appendix. In Spanish.

This pamphlet contains a complete bibliography of the publications issued by the Spanish Institute of Oceanography from its establishment in 1916 until 1947. The papers are listed according to the publication series issued by this institution, covering the following subjects: Memoirs, results of the expeditions made under international agreements, studies, notes and summaries, Fisheries Bulletin, which became the Bulletin of Oceanography and Fisheries in 1930, digest of articles, and the International Congress of Oceanography, Marine Hydrography, and Continental Hydrology. In the appendix the papers published by the Ibero-American Oceanographic Council, and the Memoirs and Journal of the Institute are also listed.

Literatuuroverzicht over de chemische Samenstelling en de Voedingswaarde van Vis, Schaaldieren en Weekdieren (Review of the Literature on the Chemical Composition and Food Value of Fish, Crustaceans, and Mollusks). M.P.J. Van der Rijst. Reprinted from Voeding (Koninginnegracht 42, The Hague, Netherlands), Vol. 11, No. 6 (15 June 1950). 82 pp., bibliog., tables. In Dutch.

A bibliography of 437 publications is listed, and they are reviewed under the following headings: general analyses; proteins and other nitrogenous substances, including amino acids, volatile bases, etc.; fats and lipoid substances (lecithine, cholesterol) of fish body and fish-liver oils; carbohydrates; minerals (K, Na, Ca, Mg, P, S, Cl, etc.); trace elements (Cu, Fl, Zn, As, Fe, I, Mn) and vitamins (vitamins A, B-complex, B_1, B_2 (lactoflavine), B_6, nicotinic acid, pantothenic acid, biotin, inositol, folic acid, antigray hair factor, and vitamins C, D, E, F, and K.) The digestibility of the fish proteins and fats is also reviewed, as well as the biological values of the proteins. The review covers not only the more readily accessible literature from such countries as Canada, France, Germany, Holland, Italy, Norway, United Kingdom, and the United States, but also a large number of publications originating in Australia, India, Japan, New Zealand, and South Africa (including publications on subtropical and tropical fishes).

British Standard 1582:1950. Technical Compound Cod Oil. British Standards Institution, 24/28 Victoria Street, Westminster, London S.W. 1, England, 1950. 16 pp. In English.

The British Standards Institution gives the specifications of technical compound cod oil, which is largely used for tanning or currying and dressing of leather, with the British standards for color, specific gravity, apparent density, iodine value, acidity, unsaponifiable matter, iron, and cold test. The sampling procedure is prescribed, and the standard methods for determining all of the above values are given in detail.

Undersøgelse af Helkonserves (Investigations regarding Canned Food). Hans Riemann. Parts III, IV, and V. Fiskeriministeriets Forsøgslaboratorium, Copenhagen K, Denmark, 1950. In Danish with English summary.

Part III lists the various heat-resistant types of bacteria found in Danish canned foods, especially canned fish. Part IV describes the testing of the heat resistance of the spores of such bacteria. Part V describes the application of such heat-resistance determinations for the calculation of safe canning processes.

Some Technological Aspects of the Fresh and Frozen Seafood Industry. H.R. Beard. National Fisheries Institute, 724 Ninth Street, N.W., Washington 1, D.C., U.S.A., 1950. 32 pp. In English.

This booklet combines a series of leaflets published under the title "Technologic" It contains information on spoilage of fisheries products and suggestions as to the best procedure for icing, storage, freezing, shipment, etc.

Marketing Frozen Foods - Facilities and Methods. J.S. Larson, J.A. Mixon and E.C. Stokes. United States Department of Agriculture, Production and Marketing Administration, Marketing Facilities Branch, Washington, D.C., U.S.A., June 1949. 175 pp., 17 tables, 98 fig. In English.

This report gives information on frozen fishery products processed in some 253 plants (1948) in the United States of America. The processors' role, transportation facilities (railway refrigerating cars, refrigerated trucks, water and air transport), refrigerated warehouse facilities, the wholesale distributors' role (including plant designs, delivery facilities, and methods), retail facilities, institutional and industrial facilities, locker plants and home storage facilities, are all discussed in detail and are well illustrated.

UNITS

Weight, volume, capacity, length, and area are expressed in metric units. "Tons" and "quintals," when not qualified, therefore mean "metric tons" (1,000 kilograms) and "metric quintals" (100 kilograms), respectively.

The term "dollars," unless otherwise specified, refers to U.S. dollars.

CONVERSION FACTORS

Converted from:	To:	Multiplier
General		
Pounds	Metric tons	0.0004536
Hundredweight (112 pounds)	" "	0.050802
Hundredweight (100 pounds)	" "	0.04536
Quintal (112 pounds)	" "	0.050802
Short ton (2,000 pounds)	" "	0.9072
Long ton (2,240 pounds)	" "	1.0161
U.S. gallons	Liters	3.7853
Imperial gallons	"	4.546
Fisheries products		
Hectoliter (herring or oil)	Metric tons	0.093
Wet-salted cod and allied species	Dried basis	0.66

SYMBOLS

... Not available ø Negligible (less than half the unit used) - Nil

Other FAO Fisheries Publications

YEARBOOK OF FISHERIES STATISTICS - 1947

Bilingual, English and French, with Preface in Spanish. August 1948. Photo-offset. 368 pp. Price US$4.00 or the equivalent. 1948-49 Yearbook will be available shortly.

Part I of this volume consists of 143 statistical tables on the import and export trade of 61 countries in fish and fisheries products since 1930. Part II contains 86 tables on (a) landings and (b) miscellaneous subjects such as the number of fishermen, craft, etc., for about 20 countries.

SALTED COD AND RELATED SPECIES

FAO Fisheries Study No. 1, English edition published in July 1949, Washington, D.C. Printed xii + 196 pp. French and Spanish editions in press. Price US$2.00 or the equivalent.

A comprehensive study of the factors influencing production and trade of salted cod and related species during the inter-war period, and an analysis of present problems of the salted cod industry. 67 pages of statistical tables.

WORLD FISHERIES ABSTRACTS

Beginning with the January-February issue

A bimonthly review of the technical literature on fishing and the fishing industry. The abstracts are prepared and arranged for card filing.